



U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

400 Seventh Street, S.W.  
Washington, D.C. 20590

MAY - 9 2002

Mr. Thomas L. Shaw  
Vice-President Operations  
Marathon Ashland Pipe Line LLC  
539 South Main Street  
Findlay, OH 46840

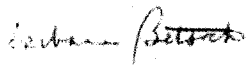
Re: Marathon Ashland Pipe Line LLC CPF No. 3-2002-5007-H

Dear Mr. Shaw:

Enclosed is a Corrective Action Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. It requires you to take certain corrective actions with respect to the operation of your pipeline.

Service is being made by certified mail and facsimile. Your receipt of the enclosed document constitutes service of that document. The terms and conditions of this Corrective Action Order are effective upon receipt.

Sincerely,

  
Gwendolyn M. Hill  
Pipeline Compliance Registry  
Office of Pipeline Safety

Enclosure

**VIA CERTIFIED MAIL (RETURN RECEIPT REQUESTED) AND TELECOPY**

**DEPARTMENT OF TRANSPORTATION  
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION  
WASHINGTON, DC 20590**

**In the Matter of  
Marathon Ashland Pipe Line LLC,  
Respondent.**

**CPF No. 3-2002-5007-H**

**CORRECTIVE ACTION ORDER**

**Purpose and Background**

This Corrective Action Order is being issued, under authority of 49 U.S.C. § 60112, to require Marathon Ashland Pipe Line LLC (Respondent) to take the necessary corrective action to protect the public and environment from potential hazards associated with a failure on Respondent's 22-inch crude oil line from Roxana, IL to Patoka, IL. Pursuant to 49 U.S.C. § 60117, the Central Region, Office of Pipeline Safety (OPS) initiated an investigation of the failure.

**Preliminary Findings**

- On April 29, 2002, a failure occurred on Respondent's Woodpat System, a 22-inch crude oil pipeline near Wood River, Illinois in Madison County.
- The failure resulted in a release of 2,200-3,000 barrels of crude oil, which did not ignite. There were no deaths or injuries.
- The failure occurred in a cultivated field, contaminating the soil surfaces in the vicinity of the failure. The product flowed from the failure site through a tile line into a drainage ditch known as Indian Creek. Reports indicate that the spill was being contained by booms.
- The line is routed through predominantly rural areas of Illinois passing within 1-2 miles of numerous small communities along the route as well as crossing numerous public roadways, rivers, drainage areas, and streams. The pipeline also passes through residential areas.
- Following the failure, Respondent isolated the line by closing the upstream mainline valve at Roxana which is 2.5 miles from the failure site and the downstream mainline valve which is 19.18 miles from the failure site. The failure site is at Engineering Station 2756+00.

- Respondent has voluntarily agreed to a 20% pressure reduction pending further investigation.
- Respondent has contracted with Kiefner and Associates to examine the failed pipeline and to assist in the determination of the cause. Selected segments of the failed sections have been sent to a laboratory for further examination.
- The maximum operating pressure (MOP) of the 22-inch crude oil line is 943 psig. The discharge pressure at Roxana Pump Station (2889+96) was 875 psig at the time of failure.
- The Woodpat System is 55 miles long. The 22-inch crude oil line originates at the Roxana Pump Station and continues east to Patoka, IL.
- The failed segment of the 22-inch pipeline is approximately 2.5 miles downstream of the Roxana Pump Station (2889+96).
- The 22-inch pipeline from the Roxana Pump Station (2889+96) to Patoka Pump Station (0+00) was installed in 1950 and is constructed predominantly of 22-inch x 0.344-inch w.t. and 0.312-inch w.t., X46, low frequency electric-resistance welded pipe (ERW) pipe manufactured by Youngstown. The segment in which the failure occurred was constructed of 0.344-inch w.t. pipe.
- The preliminary investigation indicates the failure initiated in the longitudinal seam. The rupture propagated along the longitudinal seam. The length of the rupture is approximately 46 feet long in a 50 foot joint. The failed pipe segment has been sent to a metallurgical laboratory for further analysis.
- The pipeline was last pressure tested in August 1991, four (4) hours at a minimum of 1.25 x MOP and four (4) hours at a minimum of 1.10 x MOP.
- The pipeline is owned 40% by Marathon Ashland Pipe Line LLC and 60% by Shell Pipeline Company LP. The pipeline is operated by Marathon Ashland Pipe Line LLC.
- OPS identified low-frequency ERW pipe to be subject to failures in the longitudinal seam because of manufacturing defects. OPS issued Alert Notices on January 28, 1988, and again on March 8, 1989, to inform pipeline operators of the problem. Failures of the longitudinal seam of the pipe had been caused by the growth over time of manufacturing defects in the ERW seams. Selective corrosion of the seam and cyclic fatigue contribute to the growth of these defects. Although OPS review has also shown that in many cases pipelines that had been hydrostatically tested had operated safely since they were tested, there are also cases in which selective corrosion or cyclic fatigue have led to operating failures many months or years after the test.

### **Determination of Necessity for Corrective Action Order and Right to Hearing**

Section 60112 of Title 49, United States Code, provides for the issuance of a Corrective Action Order, after reasonable notice and the opportunity for a hearing, requiring corrective action, which may include the suspended or restricted use of a pipeline facility, physical inspection, testing, repair, replacement, or other action as appropriate. The basis for making the determination that a pipeline facility is hazardous, requiring corrective action, is set forth both in the above referenced statute and 49 C.F.R. §190.233, a copy of which is enclosed.

Section 60112, and the regulations promulgated thereunder, provides for the issuance of a Corrective Action Order without prior opportunity for notice and hearing upon a finding that failure to issue the Order expeditiously will result in likely serious harm to life, property or the environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the Order.

After evaluating the foregoing preliminary findings of fact, I find that the continued operation of the 22-inch pipeline at normal operating pressures without corrective measures would be hazardous to life, property and the environment. Additionally, after considering the pipeline's prior operating history, age of the pipe and the method of manufacturing, lack of apparent cause of the failure, the proximity of the pipeline to populated areas, public roads, and environmentally sensitive areas, the pressure required for transporting the material, and the size of the line, I find that a failure to issue expeditiously this Order, requiring immediate corrective action, would result in likely serious harm to life, property, and the environment.

Accordingly, this Corrective Action Order mandating needed immediate corrective action is issued without prior notice and opportunity for a hearing. The terms and conditions of this Order are effective upon receipt.

Within 10 days of receipt of this Order, Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, delivered personally, by mail or by telecopy at (202) 366-4566. The hearing will be held in Kansas City, Missouri or Washington, DC on a date that is mutually convenient to OPS and Respondent.

After receiving and analyzing additional data in the course of this investigation, OPS may identify other corrective measures that need to be taken. In that event, Respondent will be notified of any additional measures required and amendment of this Order will be considered. To the extent consistent with safety, Respondent will be afforded notice and an opportunity for a hearing prior to the imposition of any additional corrective measures.

### **Required Corrective Action**

Pursuant to 49 U.S.C. § 60112, I hereby order Respondent to immediately take the following corrective actions with respect to its 22-inch Woodpat System:

1. Maintain a 20 percent (20%) reduction in the operating pressure along the Woodpat System from Roxana (2889+96) to Patoka Pump Station (0+00) which operating pressure is not to exceed 80% of the operating pressure in effect at Roxana Pump Station just prior to the failure. Specifically, the discharge pressure is not to exceed 685 psig at Roxana. This restriction shall remain in place until written approval, pursuant to Item 6, is obtained from the Director, Central Region, OPS.
2. Conduct a detailed metallurgical analysis of the pipe that failed on April 29, 2002 to determine the cause and contributing factors. Submit a copy of the report of this analysis to the Director, Central Region, OPS, within one week of your receipt of the report. The metallurgical analysis shall include evaluation for possible influence of cyclic fatigue and selective seam and crevice corrosion.
3. Submit a written plan, with a schedule, to verify the integrity of the line from Roxana Pump Station (2889+96) to Patoka Pump Station (0+00). The plan must provide integrity testing that addresses all known or suspected factors in the failure, including if relevant:
  - A. Internal inspection tool surveys and remedial action. The type of internal inspection tools used shall be technologically appropriate for assessing the system based on the type of failure that occurred on April 29, 2002.
  - B. A detailed description of the inspection and repair criteria that will be used in the field evaluation of the anomalies that are excavated. This is to include a description of how any defects are to be graded and the schedule for repairs or replacement.
  - C. An evaluation of the line for areas of damaged or disbonded coating, including but not limited to, a close-interval, current interrupted, pipe-to-soil potential survey.
  - D. Integration of all available data from internal inspections, metallurgical analyses, and historical data, including repair and cathodic protection records.
  - E. Hydrostatic pressure testing of the line segment, including a detailed metallurgical analysis of each seam failure that occurs during the hydrostatic pressure testing of the line. Pressure testing must consider a short-duration high pressure test to a pressure of 100% SMYS or 1.39 x MOP, as appropriate to the identified cause and contributing factors to the failure on April 29, 2002.
  - F. A schedule and means for providing the results and data for testing programs performed to the Central Region.

4. Each element of the plan must be approved by the Regional Director, who may provide approvals incrementally. Implement the plan as approved.
5. If a determination is made that internal inspection is necessary, provide the Director, Central Region with a report of the results of the internal inspection within 2 weeks of receipt of the report, including the identification (and location) of any anomalies that remain in the 22-inch line that have not yet been evaluated or repaired and the criteria used for classifying the anomalies for evaluation. Include your schedule for completing the evaluation and repair of these anomalies.
6. Respondent may request approval from the Regional Director, to increase its operating pressure above the interim maximum operating pressure under Item 1, based on showing that the hazard has been abated or that a higher pressure is justified based on an analysis showing that the pressure increase is safe considering all known defects, anomalies and operating parameters of the pipeline. The Regional Director's determination will be based on cause of failure and provision of evidence that mitigation actions taken by the operator provide for the safe operation of the pipeline. Appeals to determinations of the Regional Director in this regard will be subject to the decision of the Associate Administrator for Pipeline Safety.
7. In order to support a request under Item 6 for approval of a return to pre-failure operating pressure, Respondent must submit a written plan, as designated in Item 3, to verify the integrity of the 22-inch line from Roxana Pump Station to Patoka Pump Station. This plan must include any evaluation, testing, repairs, or other remedial action necessary to verify the integrity of the segment as well as a schedule for completion of these actions. The Director, Central Region, OPS may approve the plan and its completion incrementally.
8. Conduct an Operational Reliability Assessment (ORA) of all applicable Woodpat ERW sections designed to examine the structural soundness and assure safe operation of the system. Submit proposed plan for conducting the ORA for approval by the Regional Director within 60 days of the issuance of this Order. The Regional Director may require modification of the plan prior to approval if it does not meet the requirements of this Order. The ORA shall include the following:
  - a. Analysis of the operating conditions over the history of the operation of the pipeline, including but not limited to pressures, surges, and cycling. Base the analysis on all available data to determine factors that may have contributed to the failures.
  - b. Metallurgical examination of samples of pipe from each failure that occurs during hydrostatic testing that is not readily and conclusively identified as having failed because of damage from external forces or general corrosion not associated with the weld seam, in order to determine the cause of and any contributing factors to the failure.
  - c. Performance of appropriate fracture mechanics calculations to correlate the actual size of defects experienced with theoretical predictions of failure pressure versus defect size. Fracture mechanics analysis shall be performed as pressure test and metallurgical

examination data are available. This analysis will be conducted by an independent fracture mechanics specialist. (Respondent may propose an alternative method if it ensures an equivalent level of safety for the pipeline).

- d. Failure analysis calculations and estimated pipe life calculations, that consider pipe specifications, typical defect size, pipeline operating pressures and pressure fluctuations, and other factors significant to the probable pipe service life. Based on the estimated pipe life, agreement shall be reached on a periodic testing schedule or alternative actions to ensure the safety of the pipeline.
- e. Development of a reasonable and prudent rationale, and program, that will assure safe operation of the pipeline based on the results of the hydrostatic testing and the fracture mechanics analyses. This program shall establish a maximum operating pressure at which the pipeline may be safely operated after completion of the hydrostatic testing and ORA. Surge pressures induced in the pipeline will be considered in determining the maximum operating pressure.

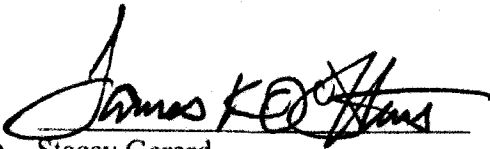
Complete the ORA, and submit a final ORA Report to the Regional Director, within six months after completion of the hydrostatic testing specified in paragraph 3E.


- 9. Provide the Regional Director with the following reports:
  - A. Advance Notice of Testing. The report must provide 48 hours of advance notice to the Region Director of any testing.
  - B. Monthly summary reports on the results of hydrostatic testing of each section completed during the previous month. These summary reports shall provide information as to type of failure, failure pressure, method of repair, and location of failure.
  - C. Reports of any metallurgical analyses conducted to determine cause and contributing factors of failures as soon as the reports are available.
  - D. Reports of pressure test results after completion of testing. The reports must include, at a minimum, pressure and temperature recording charts and logs and deadweight calibration test data.
- 10. The Director, Central Region, OPS may grant an extension of time for compliance with any of the terms of this order for good cause. A request for an extension must be in writing.

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The procedures for the issuance of this Order are described in Part 190, Title 49, Code of Federal Regulations, § 190.233, a copy of which is enclosed, is made part of this Order and describe the Respondents' procedural rights relative to this Order.

Failure to comply with this Order may result in the assessment of civil penalties of not more than \$25,000 per day and in referral to the Attorney General for appropriate relief in United States District Court.

A handwritten signature in black ink, appearing to read "Stacey Gerard", is written over a horizontal line.

 Stacey Gerard  
Associate Administrator  
for Pipeline Safety

MAY - 9 2002

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Date Issued